CLAIMS

What is claimed is:

1. The use of a compound capable of modulating transcription arising from an egr-1 response element consensus sequence and expression state of a gene in manufacture of a medicament for the treatment of a disease or health condition associated with an expression state of a gene associated with an egr-1 response element consensus sequence.

2. The use of claim 1 wherein said compound comprises a compound selected from the group consisting of resveratrol, 3, 4', 5 trinitroxy trans stilbene and 3, 4', 5 tri(nitroxy)ethoxy trans stilbene, an analogue of any of the foregoing, and a pharmaceutically acceptable salt of any of the foregoing.

3. The use of claim 1 wherein said disease is selected from the group consisting of cancer and other proliferative diseases, vascular diseases, wounds requiring therapeutic intervention, inflammation, and pulmonary disorders.

4. The use of claim 3 wherein said pulmonary disorder is selected from emphysema, asthma, cystic fibrosis, chronic . obstructive pulmonary disorder, CVD, atherosclerosis, hypertension and/or restenosis.

5. The use of claim 3 wherein said cancer related disorder is selected from the group consisting of cell cycle arrest or apoptosis disorders associated with altered p53 levels, and angiogenesis and stenosis associated with altered activity levels of FGF-2.

6. The use of claim 1 wherein said health condition is selected from the group consisting of fertility and infertility, vascular diseases, wounds requiring therapeutic intervention, inflammation, and pulmonary disorders.

7. The use of claim 6 wherein said vascular disease comprises atherosclerosis, cerebrovascular disorders, restenosis following angioplasty or ischemia.

8. The use of claim 1 wherein said egr-1 response element consensus sequence is associated with trans-activating transforming growth factor-beta (TGF-β).

9. The use of claim wherein said disease is selected from the group consisting of cancer and other proliferative diseases.

10. The use of claim 1 wherein said egr-1 response element consensus sequence is associated with leutenizing hormone.

11. The use of claim 10 wherein said health condition is reduced fertility.

12. The use of a compound capable of modulating transcription arising from an egr-1 response element consensus sequence and expression state of p21 in manufacture of a medicament for the treatment of a disease or health condition selected from the group consisting of cancer, other proliferative diseases, and susceptibility to cellular transformation.

13. The use of a compound capable of modulating transcription arising from an egr-1 response element consensus sequence and expression state of p53 in manufacture of a medicament for the treatment of a health condition requiring treatment selected from the group consisting of induced cell cycle arrest, cell injury and need for cell repair.

14. The use of a compound capable of modulating transcription arising from an egr-1 response element consensus sequence and expression state of FGF-2 in manufacture of a medicament for the treatment of a health condition requiring treatment selected from the group consisting of angiogenesis and stenosis.

15. The use of claim 1 wherein said compound comprises resveratrol, 3, 4', 5 trinitroxy trans stilbene and 3, 4', 5 tri(nitroxy)ethoxy trans stilbene or an analogue thereof.

16. A method for identifying a compound capable of modulating expression of a gene associated with an egr-1 response element consensus sequence comprising providing an expression system comprising cells or cellular

extracts and an egr-1 response element operably linked to a promoter and a gene whose expression can be modulated and measured, and determining whether said compound can induce modulation of expression in said expression system.

17. The method of claim 16 wherein said egr-1 response element consensus sequence comprises AGCCCCCGC.

18. The use of a compound identified by the method of claim 17 in manufacture of a medicament for the treatment of a disease or health condition.

19. The use of claim 18 wherein said compound comprises a compound with a donatable nitric oxide component and a free radical scavenging anti-oxidant molecule.

20. The use of claim 19 wherein said compound comprises resveratrol and analogues thereof comprising at least one nitric oxide donating moieties substituted for at least one naturally occurring hydroxyl group of said resveratrol.

21. The use of claim 20 wherein the compound is selected from the group consisting of 3, 4', 5 trinitroxy trans stilbene and 3, 4', 5 tri(nitroxy)ethoxy trans stilbene.

22. The use of claim 20 wherein said analogue is selected from the group of OCxNO2 substituted compounds.

23. The use of claim 22 wherein said analogue is a diazeniumdiolate analogue.

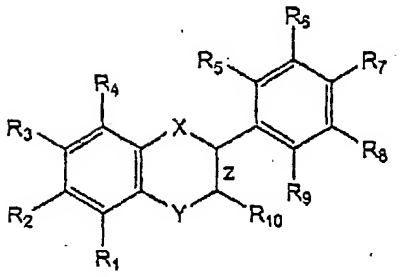
24. The use of claim 20 wherein at least one naturally occurring hydroxyl group of said resveratrol is substituted with sulphur or nitrogen.

25. A method for identifying a compound capable of modulating transcription arising from an egr-1 or an egr-1 consensus sequence element comprising the step of providing a test system comprising an egr-1 or an egr-1 consensus sequence element operably linked to a gene capable of expressing a detectable

product, measuring a reference level of detectable product, contacting said test system with a compound to be tested and thereafter measuring the level of detectable product; comparing said detected level against the reference level and determining therefrom whether said compound is an effector of egr-1 or an egr-1 consensus sequence element.

26. A compound capable of modulating expression of a gene associated with an egr-1 response element consensus sequence comprising a donatable nitric oxide component and a free radical scavenging anti-oxidant molecule.

27. The compound of claim 26 comprising a flavonoid compound comprising the structure:



wherein

R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R13 and R14 may each be independently hydrogen, hydroxyl [OH], hydroxyalkyl, aminoalkyl, Bromide (Br), Iodide (I), nitrooxy [ONO.sub.2], methoxy [OCH.sub.3], ethoxy [OCH.sub2CH.sub.3], fluoride [F], chloride [Cl], CF.sub.3, CCl.sub.3, phosphate, R11, R12, OR11, OR12, OCOR11, OCOR12, O-sulfate [the sulfate conjugate], or O-glucoronidate [the glucoronic (AKA glucuronic) acid conjugates], with the proviso that at

least one of R1-R10 or R13 or R14 is nitrooxy, R12, OR12, or OCOR12; and

Wherein

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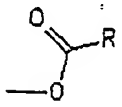


and R is R11 or R12

wherein

R11 is C_{1-18}, aryl, heteroaryl or a derivative thereof, wherein said derivative is optionally substituted and optionally branched, and may have one or more of the C atoms replaced by S, N or O, and

wherein

R12 is C_{1-18}, aryl, heteroaryl or a derivative thereof, wherein said derivative is optionally substituted, optionally branched, may have one or more of the C atoms replaced by S, N or O, and optionally containing one or more ONO.sub.2; and

wherein

X can be O, CR13 or NR13;

Y can be CO [a ketone still maintaining the 6 atom ring structure], CR14 or NR14; and

Z can be a single or a double bond.

28. A pharmaceutical composition comprising the flavonoid compound of claim 27 in combination with a pharmaceutically acceptable carrier.

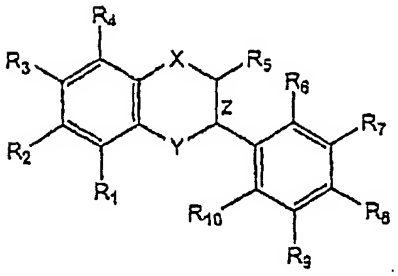
29. The use of a flavonoid compound according to claim 28 in manufacture of a medicament for the treatment of a disease or health condition associated with an expression state of a gene associated with an egr-1 response element consensus sequence.

30. The use of claim 29 wherein said disease is selected from the group consisting of cancer and other proliferative diseases, vascular diseases, wounds requiring therapeutic intervention, inflammation, and pulmonary disorders.

31. The use of claim 30 wherein said pulmonary disorder is selected from emphysema, asthma, cystic fibrosis, chronic . obstructive pulmonary disorder, CVD, atherosclerosis, hypertension and/or restenosis.

32. The use of claim 30 wherein said cancer related disorder is selected from the group consisting of cell cycle arrest or apoptosis disorders associated with altered p53 levels, and angiogenesis and stenosis associated with altered activity levels of FGF-2.

33. The compound of claim 26 comprising an isoflavonoid compound comprising the structure:



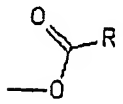
wherein

R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R13 and R14 may each be independently hydrogen, hydroxyl [OH], hydroxyalkyl, aminoalkyl, Bromide (Br), Iodide (I), nitrooxy [ONO.sub.2], methoxy

[OCH.sub.3], ethoxy [OCH.sub2CH.sub.3], fluoride [F], chloride [Cl], CF.sub.3, CCl.sub.3, phosphate, R11, R12, OR11, OR12, OCOR11, OCOR12, O-sulfate [the sulfate conjugate], or O-glucoronidate [the glucoronic (AKA glucuronic) acid conjugates], with the proviso that at least one of R1-R10 or R13 or R14 is nitrooxy, R12, OR12, or OCOR12; and

wherein

OCOR means



and R is R11 or R12

wherein

R11 is C_{1-18}, aryl, heteroaryl or a derivative thereof, wherein said derivative is optionally substituted and optionally branched, and may have one or more of the C atoms replaced by S, N or O, and

wherein

R12 is C_{1-18}, aryl, heteroaryl or a derivative thereof, wherein said derivative is optionally substituted, optionally branched, may have one or more of the C atoms replaced by S, N or O, and optionally containing one or more ONO.sub.2; and

wherein

X can be O, CR13 or NR13;

Y can be CO [a ketone still maintaining the 6 atom ring structure], CR14 or NR14; and

Z can be a single or a double bond.

34. A pharmaceutical composition comprising the isoflavonoid compound of claim 33 in combination with a pharmaceutically acceptable carrier.

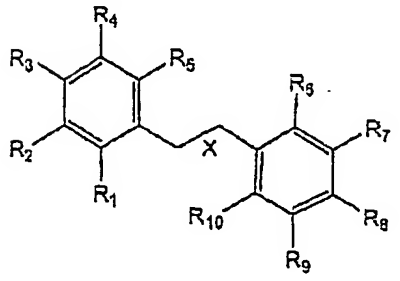
35. The use of an isoflavonoid compound according to claim 34 in manufacture of a medicament for the treatment of a disease or health condition associated with an expression state of a gene associated with an egr-1 response element consensus sequence.

36. The use of claim 35 wherein said disease is selected from the group consisting of cancer and other proliferative diseases, vascular diseases, wounds requiring therapeutic intervention, inflammation, and pulmonary disorders.

37. The use of claim 36 wherein said pulmonary disorder is selected from emphysema, asthma, cystic fibrosis, chronic . obstructive pulmonary disorder, CVD, atherosclerosis, hypertension and/or restenosis.

38. The use of claim 36 wherein said cancer related disorder is selected from the group consisting of cell cycle arrest or apoptosis disorders associated with altered p53 levels, and angiogenesis and stenosis associated with altered activity levels of FGF-2.

39. The compound of claim 26 comprising a stilbene compound comprising the following structure:

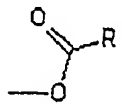


wherein

R1, R2, R3, R4, R5, R6, R7, R8, R9 and R10 may each be independently hydrogen, hydroxyl [OH], hydroxyalkyl, aminoalkyl, Bromide (Br), Iodide (I), nitrooxy [ONO.sub.2], methoxy [OCH.sub.3], ethoxy [OCH.sub2CH.sub.3], fluoride [F], chloride [Cl], CF.sub.3, CCl.sub.3, phosphate, R11, R12, OR11, OR12, OCOR11, OCOR12, O-sulfate [the sulfate conjugate], or O-glucoronidate [the glucoronic (AKA glucuronic) acid conjugates], with the proviso that at least one of R1-R10 is nitrooxy, R12, OR12, or OCOR12; and

wherein

OCOR means



and R is R11 or R12

wherein

R11 is C_{1-18}, aryl, heteroaryl or a derivative thereof, wherein said derivative is optionally substituted and optionally branched, and may have one or more of the C atoms replaced by S, N or O, and

wherein

R12 is C_{1-18}, aryl, heteroaryl or a derivative thereof, wherein said derivative is optionally substituted, optionally branched, may have one or more of the C atoms replaced by S, N or O, and optionally containing one or more ONO.sub.2 and

wherein

X can be a single, double or triple bond.

40. A pharmaceutical composition comprising the a stilbene compound of claim 39 in combination with a pharmaceutically acceptable carrier.

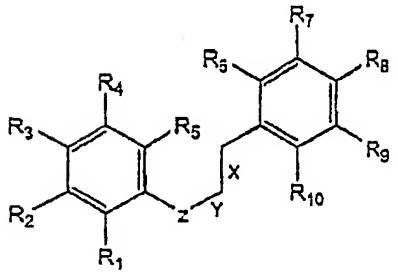
41. The use of a stilbene compound according to claim 40 in manufacture of a medicament for the treatment of a disease or health condition associated with an expression state of a gene associated with an egr-1 response element consensus sequence.

42. The use of claim 41 wherein said disease is selected from the group consisting of cancer and other proliferative diseases, vascular diseases, wounds requiring therapeutic intervention, inflammation, and pulmonary disorders.

43. The use of claim 42 wherein said pulmonary disorder is selected from emphysema, asthma, cystic fibrosis, chronic . obstructive pulmonary disorder, CVD, atherosclerosis, hypertension and/or restenosis.

44. The use of claim 42 wherein said cancer related disorder is selected from the group consisting of cell cycle arrest or apoptosis disorders associated with altered p53 levels, and angiogenesis and stenosis associated with altered activity levels of FGF-2.

45. The compound of claim 26 comprising a chalcone compound comprising the following structure:



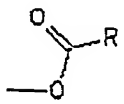
wherein

R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R13 and R14 may each be independently hydrogen, hydroxyl [OH], hydroxyalkyl, aminoalkyl,

Bromide (Br), Iodide (I), nitrooxy [ONO.sub.2], methoxy [OCH.sub.3], ethoxy [OCH.sub2CH.sub.3], fluoride [F], chloride [Cl], CF.sub.3, CCl.sub.3, phosphate, R11, R12, OR11, OR12, OCOR11, OCOR12, O-sulfate [the sulfate conjugate], or O-glucoronidate [the glucoronic (AKA glucuronic) acid conjugates], with the proviso that at least one of R1-R10 or R13 or R14 is nitrooxy, R12, OR12, or OCOR12; and

wherein

OCOR means



and R is R11 or R12

wherein

R11 is C_{1-18}, aryl, heteroaryl or a derivative thereof, wherein said derivative is optionally substituted and optionally branched, and may have one or more of the C atoms replaced by S, N or O, and

wherein

R12 is C_{1-18}, aryl, heteroaryl or a derivative thereof, wherein said derivative is optionally substituted, optionally branched, may have one or more of the C atoms replaced by S, N or O, and optionally containing one or more ONO.sub.2;

wherein

X can be a single or a double bond.

Y can be a single or a double bond

Z can be CO [a ketone] CR13 or NR13.

46. A pharmaceutical composition comprising the a chalcone compound of claim 45 in combination with a pharmaceutically acceptable carrier.

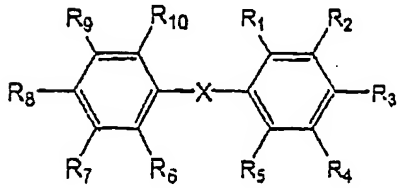
47. The use of a chalcone compound according to claim 46 in manufacture of a medicament for the treatment of a disease or health condition associated with an expression state of a gene associated with an egr-1 response element consensus sequence.

48. The use of claim 47 wherein said disease is selected from the group consisting of cancer and other proliferative diseases, vascular diseases, wounds requiring therapeutic intervention, inflammation, and pulmonary disorders.

49. The use of claim 48 wherein said pulmonary disorder is selected from emphysema, asthma, cystic fibrosis, chronic . obstructive pulmonary disorder, CVD, atherosclerosis, hypertension and/or restenosis.

50. The use of claim 48 wherein said cancer related disorder is selected from the group consisting of cell cycle arrest or apoptosis disorders associated with altered p53 levels, and angiogenesis and stenosis associated with altered activity levels of FGF-2..

51. The compound of claim 26 comprising a polyphenol compound comprisng the following structure:



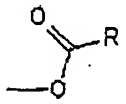
wherein

R1, R2, R3, R4, R5, R6, R7, R8, R9, and R10 may each be independently hydrogen, hydroxyl [OH], hydroxyalkyl, aminoalkyl,

Bromide (Br), Iodide (I), nitrooxy [ONO.sub.2], methoxy [OCH.sub.3], ethoxy [OCH.sub2CH.sub.3], fluoride [F], chloride [Cl], CF.sub.3, CCl.sub.3, phosphate, R11, R12, OR11, OR12, OCOR11, OCOR12, O-sulfate [the sulfate conjugate], or O-glucoronidate [the glucoronic (AKA glucuronic) acid conjugates], with the proviso that at least one of R1-R10 is nitrooxy, R12, OR12, or OCOR12; and

wherein

OCOR means



and R is R11 or R12

wherein

R11 is C1-18, aryl, heteroaryl or a derivative thereof, wherein said derivative is optionally substituted and optionally branched, and may have one or more of the C atoms replaced by S, N or O, and

wherein

R12 is C1-18, aryl, heteroaryl or a derivative thereof, wherein said derivative is optionally substituted, optionally branched, may have one or more of the C atoms replaced by S, N or O, and optionally containing one or more ONO.sub.2; and

wherein

X can be C, S, (CO), SO, AKA ketone , (SO.sub.2)N, (CO)C, (CO)N, (CO)O, C-N [single bond], C=N [double bond], C-O, N-O, N-N [single bond], or N=N [double bond].

52. A pharmaceutical composition comprising the a polyphenol compound of claim 51 in combination with a pharmaceutically acceptable carrier.

53. The use of a polyphenol compound according to claim 52 in manufacture of a medicament for the treatment of a disease or health condition associated with an expression state of a gene associated with an egr-1 response element consensus sequence.

54. The use of claim 53 wherein said disease is selected from the group consisting of cancer and other proliferative diseases, vascular diseases, wounds requiring therapeutic intervention, inflammation, and pulmonary disorders.

55. The use of claim 54 wherein said pulmonary disorder is selected from emphysema, asthma, cystic fibrosis, chronic . obstructive pulmonary disorder, CVD, atherosclerosis, hypertension and/or restenosis.

56. The use of claim 54 wherein said cancer related disorder is selected from the group consisting of cell cycle arrest or apoptosis disorders associated with altered p53 levels, and angiogenesis and stenosis associated with altered activity levels of FGF-2.